

Introduction to Remote Sensing for Scenario-Based Ecoforecasting

Please type your questions in the Question Box. We will try and get to all your questions, but if we don't, feel free to email Amber Jean McCullum your question at amberjean.mccullum@nasa.gov

Session 3 Q&A Transcripts

Question 1: Economists have mountains of data compared to the environmental data we work with, and yet economic forecasts are worse than a coin toss?

Answer 1: To clarify: that particular slide was talking about the prediction of interest rates in particular - didn't intend to lump together all economic projections as being less accurate than a coin toss. Just a particular anecdote about expert predictions of interest rates. Don't want to suggest econ projections are particularly bad, but that forecasting is a challenge in a lot of sciences.

Question 2: How if the critical forces of scenario is more than two ? How we combine it in scenario planning ?

Answer 2: That's frequently the case, that you have more than 2 important variables. One approach is to nest scenarios. If you go back and look at slide 21/22 where there are the two axes - the sea level rise and storm example where the axes are crossed to create 4 quadrants - within each of those quads you can take 2 more variables and create 4 more quadrants nested within the original. If it's storms and sea level rise, but you're also concerned about temp and land use change, so your main axes would be storms/sea level rise, and then you look at sub-scenarios within each quadrant. Additional examples of this are available in [Rowland et al. 2014](#) and [National Park Service 2013](#)

Question 3: What are the do nots for scenario planning to consider?

Answer 3: A couple of things: first off, don't assume necessarily that scientists are the best to run and facilitate scenario planning workshops. It's quite important to have good facilitators - that's something I didn't mention. It's tempting to say, "Hey! I understand how scenario planning works and I can get some people to do it." But having a good facilitator can be make or break for an effective workshop, esp if discussion contentious issues, or if there's 1-2 people

dominating the conversation. That can derail the process - and you want someone who can address those issues.

Other things you might consider: don't assume that the scenario planning process will necessarily give you an answer. In a couple (two) ways: 1) there are limits to our ability to flesh out scenario impacts & responses using our own cognitive capacity - computer tools can really bolster the process. 2) don't expect to walk out of a scenario planning exercise with a single answer about the best plan of action to move forward on. Scenarios are complex and more than likely you'll find that there are difficult and nuanced conversations that need to happen in the process, and you won't walk out with a single "this is what we should do" answer. You'll need to collectively address hard decisions.

Question 4: Many of the examples you have given us are US examples, but do you have a list of such examples for other parts of the world?

Answer 4:

Australia: <https://ajem.infoservices.com.au/items/AJEM-27-03-08>

Cambodia:

<http://www.futureoffood.ox.ac.uk/food-research-highlights/future-scenarios-guide-policy-food-security-cambodia>

Canada/U.S.:

<http://greatnorthernlcc.org/document/taking-action-climate-change-crown-continent-ecosystem>

Central America:

<https://ccaafs.cgiar.org/blog/cocoa-farmers-central-america-learn-plan-more-variable-climate#.WcQCmNOGNMA>

Europe: https://www.eea.europa.eu/publications/technical_report_2007_9

Honduras:

<https://ccaafs.cgiar.org/blog/helping-honduras-build-more-robust-climate-adaptation-strategy-agriculture-sector#.WcQCYNOGNMC>

South Africa:

http://awsassets.wwf.org.za/downloads/wwf_scenarios_for_the_future_of_water_in_south_africa_v7_6_pf.pdf

Question 5: What key factors that are unpredictable the most in scenario creating?

Answer 5: This varies a lot by location and the resource you're concerned about. Because SP is applicable to a wide variety of sectors (e.g., Shell oil using SP for oil markets, FedEx, NPS doing bison monitoring), each area has different factors that are important. Thinking about

climate, particularly in north-central U.S. - GCMs are consistent in terms of projected warming, but are less certain in terms of precipitation. Population projects are another commonly used one - in economics, resource management, land use change, etc. - that has a lot of effects.

Question 6: could you give me example about the flood Scenarios

Answer 6: Re; South Dakota example - in that situation it's an erosive landscape and there's a lot of fossils and archaeological resources exposed during heavy rainfall events. For those resources we're looking at divergent futures for variables like heavy rain events that were over a threshold of a couple inches of rain - those events would be impactful for exposing fossils that could be washed away/looted. Areas with other flooding issues might be concerned about the duration of rainfall events, or a threshold in terms of amount.

Question 7: Is there any chance that any of the recent/current major hurricanes were fore-seen in any previous scenario plan? -Nickson, Nairobi Kenya

Answer 7: That example of Hurricane Sandy in NE U.S. was one where that group just happened to predict that sort of a storm event (and its impacts) occurring. I think that's probably the exception rather than the rule. Scenario planning has that ability - you might get lucky and plan a specific event -- but don't count on scenario planning to predict particular storm events or impacts.

Question 8: In your opinion, what is the most difficulty to effectively communicate between scientists from different fields, politicians, ..., and community on scenario planning? and what solution could be to deal with it.

Answer 8: Let me start by saying the benefit of scenario planning is that it's intuitive for people - they find it makes sense, especially because it's similar to the daily decisions we make. In that sense it's a powerful tool for connecting diverse groups of people because it's relatable to a lot of different people. Within a SP context, it can be difficult to communicate changes in your critical forces across disciplines and different people - thinking of climate as an e.g. - climate change is politically contentious. If you're in a SP exercise with people that don't believe in climate change - it can be difficult to get beyond that initial conversation. You have to sometimes be careful with the way you present your scenarios so as not to alienate anyone. You want everyone at the table - and there are ways to do that. You can talk about climate change without talking about climate change. You can talk about extreme events, weather variability, etc. and say this is the best information we have for particular variables -- e.g., our best available science projects these changes in spring precipitation/temperatures. You can also ask people about changes they've observed in their lifetime. Talking with people and relating on a personal level can help get over some of those hurdles and it keeps people engaged. Hopefully, they can walk away more open minded using the science we do have

available. It also helps to come at it with humility - we can't predict the future, no one can, but this is our best attempt. People can identify with that. (This is another situation where great facilitators are **really important** to facilitate those conversations)

Question 9: Do you have any example on SP for agricultural lands, e.g., croplands or rangelands?

Answer 9: In fact, two examples mentioned in the talk - one being from South Dakota, that did encompass rangelands where people were grazing cattle as well as parks and protected areas. It included rangelands but not crops. Some of the LU SP for Florida (listed in report) have a good example of Land Use change that also includes agricultural lands.

Question 10: Is there any data set of global land use and land cover projection (gridded data set that one can use as regional climate model input)?

Answer 10: 2 questions wrapped up in one - there are land use and land cover change projections - some national, some more localized - these can be very useful for SP efforts. Can you use them in regional climate model input? There are Earth system models that use changes in land cover that affect the climate system, but I can't speak to particular examples of using those data in combination.

Question 11: On slide 27, it says that scenarios should be "thought-provoking", does this mean that in order to create more awareness only the pessimistic scenarios should be used? how to balance and transmit the outcomes from a range of scenarios positive to negative, and still create sufficient awareness and interests from local, regional, national governments?

Answer 11: So, the message on slide 27 about being thought provoking - I meant that scenarios should be "thought provoking" in the sense that they should be provocative, or challenging, not necessarily pessimistic. In other words, you don't want to stick to things as you know them today. That won't push your thinking on possible consequences of future changes and responses. You want to go a step further to consider scenarios that perhaps are a bit outside of your comfort zone. They don't have to be pessimistic - whether they're pessimistic/optimistic depends on the resource you're considering. In any scenario, there's a winner/loser, and some represent more dramatic changes from current/historic conditions than others, but whether those are good or bad changes depends a lot on who or what you're talking about.